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NEWS LETTER

VOLUME I

no 3.

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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

NEWS LETTER

FOR AUGUST 1934

Vol. I, No. 3 (Not for publication) October 1, 1934

ADMINISTRATION

Chemical work on insecticides transferred to this Bureau.--By administrative order, Secretary Wallace transferred effective September 1 the Division of Insecticides and Fungicides from the Bureau of Chemistry and Soils to the Bureau of Entomology and Plant Quarantine. In making the transfer the Secretary stated that its purpose was "to bring about a closer coordination of research along related lines." The studies involved in the Department's intensive search for insecticides that will leave no residue harmful to man on the harvested product require close coordination of the activities of chemists and entomologists. The chemical work on insecticides and fungicides continues its identity as a division with R. C. Roark in charge. Doctor Roark and his assistants in administrative work have been transferred to space assigned to the Bureau of Entomology and Plant Quarantine in the South Building on the fifth floor. The laboratory investigations carried on in Washington for the present continue to be housed in the old building of the Bureau of Chemistry and Soils, and the workers conducting them will be moved along with the chemists of the Bureau of Chemistry and Soils to the South Building when the space arranged especially for laboratory investigations is available.

FRUIT INSECT INVESTIGATIONS

Codling moth parasite Ascogaster carpocapsae colonized in new areas.--As a part of the codling moth program of the Moorestown, N.J., laboratory, has been the propagation of Ascogaster carpocapsae Vier. for colonization in areas in which it has not been known to occur, chiefly in the West and Middle West, material was gathered in the orchards near Moorestown, N.J., and mass rearing was carried on in the laboratory with the oriental fruit moth as the host. The parasites were shipped host-free, in the adult stage. H. W. Allen, in charge of this work, reports that during the months of June, July, and August 30 shipments, containing 39,100 adults, were made to Arkansas, California, Colorado, Georgia, Idaho, Kansas, Mississippi, Montana, New Mexico, and Oregon. Nearly all were forwarded by air express from Camden to the airport nearest the designated station, the trip being completed by rail. A few of the shipments to nearer points were made in refrigerated containers by railway express. The results were surprisingly good. No shipment failed, except one allowed to remain in the express office for 3 days. The mortality in most shipments was under 10 percent, and in many it was less than 1 percent. Most of the liberations were made at a time quite favorable for establishment of the parasite in the second brood of codling moth.

Results in control of plum curculio on peach.--Oliver I. Snapp and J. R. Thompson report very interesting and encouraging results from large-scale peach spraying and dusting experiments for the control of the plum curculio (Conotrachelus nenuphar Hbst.) at Fort Valley, Ga., this year. Barium fluosilicate gave the best results. The following table summarizes briefly some of the most important results of that work. In order that the degree of curculio control from the several treatments could be more accurately measured, no supplementary control measures were enforced in the orchard in which these experiments were conducted.

Treatment	Total fruit infested with curculio
	Percent
Barium fluosilicate spray	14.6
Trees jarred 17 times during season in lieu of insecticide	20.0
Cryolite spray	21.5
Lead arsenate spray	30.0
Check (untreated).......	47.9

MEXICAN FRUIT FLY CONTROL

Second consecutive month with no Mexican fruit flies taken in Texas.--Some 8,000 traps were operated on 599 premises in August, the greatest number of traps in operation at any one time since this phase of the work has been carried on. The trapping program was changed somewhat at the beginning of the month, providing for the placing of more traps in the individual groves, which will be trapped for 5 weeks only, rather than for 3 months as has been the practice heretofore. No Anastrepha ludens Loew were taken on the Texas side of the Rio Grande during the month, making the second consecutive month to elapse without finding some stage of this species. This negative showing in the face of the intensive trapping carried on would indicate that the population of this species is at a very low ebb. However, there was an increase in the number of the other species commonly taken, 45 adults of A. pallens Coq., 18 of A. serpentina Wied., 6 of A. fraterculus Wied., 1 of Anastrepha sp. "Y", and 2 of Toxotrypana curvicauda Gerst. being taken in the traps. Specimens of A. serpentina, A. fraterculus, and A. pallens were taken in traps located in brush. Two of the A. fraterculus were taken in such traps northwest of Raymondville, being the first of this species ever taken in Willacy County.

Fewer fruit flies trapped in Matamoros, Mex.--There was a decided decrease in the number of adult fruit flies trapped in Matamoros and also in the number of larvae recovered from imported fruit. Only 9 adults of A. ludens were trapped, although in view of the large number of larvae recovered from imported fruit in July, it was expected that numerous adults would be trapped in August.

Larvae of A. ludens, A. serpentina, and A. fraterculus were taken in small numbers from imported fruit on the market. An adult reared by the Mexican inspector from Manila mangoes originating in the State of Vera Cruz was tentatively identified by specialists in the National Museum as A. acidusa Walk., the species commonly found in the West Indies, rather than A. fraterculus, of authors, the species common in Mexico.

CEREAL AND FORAGE INSECT INVESTIGATIONS

Parasite of the sugarcane mealybug recovered after 2 years.--During August and September, E. K. Bynum recovered Pseudococcobius terryi (Full.), the Hawaiian parasite of the sugarcane mealybug(Pseudococcus boninsis Kuw.), at Houma, La., Cairo, Ga., and Belle Glade, Fla., in fields in which releases were made in 1932. Releases have been made from recovered material at Canal Point, Fla., and on another property near Cairo, Ga.

Vetch seed in Oregon shows no bruchids.--L. P. Rockwood and T. R. Chamberlin, Forest Grove, Oreg., report that at various times during the month (August) hairy, Hungarian, and common vetch seed was examined at cleaning mills at Monmouth, Perrydale, Albany, and Forest Grove, all in Oregon. No infestation by any of the bruchids was found.

Infestation by wheat jointworm unusually low.--Mr. Chamberlin also reports that samples from seven fields in the heart of and around the borders of the Lebanon, Oreg., jointworm colony (all that have been taken to date) showed no infestation by Harmolita tritici Fitch. A large sample taken from a field in the vicinity of the sample farm in the Molalla district also showed no infestation. Of all the fields examined in both the Lebanon and Molalla colonies, only one has shown an infestation above 6.5 percent. This was in a field of winter wheat near the southern edge of the Molalla colony, adjoining a field of infested stubble with no fence row or other barrier between. The average infestation of samples taken from this field in July and August was 41 percent.

Parasitization of western spotted cucumber beetle increases in August.--Mr. Chamberlin reports further that dissection of adult beetles taken late in August showed a parasitization by Celatoria diabrotica Shimer of 30.4 percent and none by nematodes. The highest parasitization previously found in this year's generation of beetles by C. diabrotica was 8.7 percent. Only a few female beetles were in the sample and none of these showed egg development.

Alfalfa weevil population at low ebb in Nevada.--G. I. Reeves, Salt Lake City, Utah, reports: "A preliminary survey of the Fallon, Nev., area shows that the adult alfalfa weevil population has been greatly reduced during the past season, populations in the fields examined ranging from 0 to 0.38 adults per square foot. This low adult population points toward a 1935 season free from economic damage at Fallon. At Reno the adult weevil populations range from 0.31 to 1.81 per square foot. At Fallon cocoons containing Bathyplectes curculionis (Thompson) average 10.89 per square foot, with 4.21 percent containing living Bathyplectes larvae. The average for Reno is 28.59 per square foot, with 8.09 percent viable. In other areas the adult weevil population ranges from 1.41 per square foot at Salt Lake City, Utah, to 3.48 per square foot at Salina, Utah. Cocoons of the parasite Bathyplectes curculionis are plentiful throughout the weevil territory so far examined, and are being continually recovered at Medford, Oreg., where they were colonized last spring."

JAPANESE AND ASIATIC BEETLE INVESTIGATIONS

Spread and intensity of continuous Japanese beetle infestation.--H. Fox, Moorestown, N.J., reports that the area of continuous infestation in 1934 may be provisionally estimated at 9,700 square miles, an approximate increase within the year of 900 square miles. Distribution by States is as follows: New Jersey, 6,160 square miles; Pennsylvania, 2,600 square miles; Delaware, 660 square miles; Maryland, 120 square miles; New York, 160 square miles.

Public service patents for Japanese beetle traps.--Public service patents, numbered 1968953 and 1968954, covering two types of Japanese beetle traps, were granted on August 7 to F. W. Metzger, Moorestown, N.J. The granting of these patents should greatly facilitate the manufacture of traps, in that these devices can now be made without danger of royalty claims by holders of private patents.

Insecticides tested against the Japanese beetle.--W. E. Fleming and F. E. Baker, Moorestown, report that during the season 75 different materials, alone and in combination, were tested at different concentrations under controlled conditions, to determine the value of these materials as stomach-poison insecticides for the Japanese beetle. In conducting these experiments almost 2,000 tests, each test being made with 200 freshly collected beetles, were made. During the season 400,000 beetles were used in these experiments. It is apparent that paris green and its homologs---copper lauro-arsenite, copper oleo-arsenite, copper stearo-arsenite, etc.---are less effective than acid lead arsenate in killing the beetle and cause more extensive damage to foliage. Natural cryolite, even when used at the rate of 32 pounds to 100 gallons of water, did not prevent the beetles from feeding extensively on the foliage and caused no mortality. Cuprous cyanide, even when used at the rate of 32 pounds to 100 gallons of water, was only 78 percent as effective as 8 pounds of lead arsenate in killing the beetles. Hellebore and pyrethrum were of no value as stomach poisons against this insect.

Derris protects fruit from Japanese beetle.--Derris was found to be one of the best materials for protecting fruit and foliage from attack by the Japanese beetle. The rotenone and deguelin appear to be the effective constituents. Tephrosin, toxicarol, and the resinous residue of derris were of very little value. When derris is used at the rate of 3 pounds to 100 gallons of water, the beetles feed to a limited extent on foliage but few are poisoned. The derris appears to be effective as a repellent rather than as a stomach poison. Derris, even when applied with the common stickers, appears to be readily removed by washing. The exposure to ultraviolet rays, even for 24 hours, did not appear to reduce the effectiveness of derris, although the effectiveness of derris in the field is caused by the removal of the residue from the foliage by means of rain, dew, and wind, rather than by the decomposition of the material in the presence of light.

Collection and distribution of Japanese beetle parasites.--M. H. Brunson, Moorestown, reports that a greater number of female *Tiphia popilliavora* Roh. were collected this season for liberation than have been collected during any one season in the history of the insect in this country. During August 18,767 females were collected at Lansdowne, Noble, and Langhorne, Pa., by five men in 15 days, the average rate of collection being 257 females per man per day. The cost of collection averaged 1.5 cents per female. During the month, 176 colonies, consisting of about 100 females each, were liberated in the areas in Pennsylvania, New Jersey, Delaware, and Maryland that are heavily infested by the beetle.

Experiments with Tiphia on Japanese beetle.--L. B. Parker, Yokohama, Japan, reports, in connection with studies of the parasitization of the Japanese beetle by the imported species *Tiphia tegitiplaga* Allen and Jaynes, that the results, while not considered conclusive, indicate that the progeny of second-generation parent *Tiphia* reared on grubs of *Popillia japonica* Newm. are not true *Popillia* parasites, although in the laboratory this host was readily acceptable to the parent females.

Dexia ventralis as a Japanese beetle parasite.--T. R. Gardner, reporting on studies with *Dexia ventralis* Ald., an imported parasite of the Japanese beetle, states that from July 31 to August 10, 20 *D. ventralis* females were collected at the Haddonfield, N.J., colony and were used in the laboratory for propagation work. At the end of August these females had parasitized 2,009 Japanese beetle grubs, averaging over 100 grubs per female, and 13 of the flies were still alive and were larvipositing. On August 14, 1,008 grubs parasitized by *D. ventralis* were placed in a pasture near Elkton, Md., where Japanese beetle grubs were abundant and where *Phyllophaga* grubs were moderately abundant.

Electric light traps for the Asiatic garden beetle.--H. C. Hallock and I. M. Hawley, reporting on tests against the Asiatic garden beetle on Long Island and in New Jersey, state that trap light tests were conducted using two types of traps and lights of the following type: 100-watt daylight bulb, 500-watt daylight bulb, G-5 mercury vapor lamp, ultraviolet lamp, and a neon lamp. The G-5 lamp was found the most effective in attracting beetles to the traps. The 500-watt lamp was so bright that it did not prove effective in the traps with a smaller baffle used in 1934, though in the traps with large baffles and a large funnel used in 1933, nearly as many beetles were caught as when the G-5 lamp was used. The 100-watt daylight lamp with a small trap should prove very effective for small property owners. On good nights this trap has caught as high as 2,000 beetles in an hour.

JAPANESE BEETLE CONTROL

Fruit, vegetable, and cut-flower inspection at seasonal level.--Produce submitted for Japanese beetle inspection in Philadelphia consisted principally of consignments to summer estates in Maine, provisions for ships' stores on vessels sailing from Philadelphia to nonregulated ports of the United States, and, occasionally, of wholesalers' shipments to distant markets where higher prices prevailed. Japanese beetles were still being removed from inspected material, particularly greenhouse-grown cut flowers and freshly picked beans. Inspection of farm products showed a decided increase in both Baltimore and Salisbury, Md., due principally to large shipments of beans and peaches. Most of the beans originated on infested farms, necessitating careful inspection of each hamper. There was also a noticeable increase in shipments of cut flowers from the Baltimore wholesale houses.

Cessation of Japanese beetle flight.--By the middle of August flight of the adult beetle had subsided throughout New Jersey and the Philadelphia area. Similar conditions were reported from all other sections where there was heavy population of the insect. Complaints of beetle injury in flower gardens in New York City and Brooklyn and in adjoining counties were less frequent. Passing of the peak infestation early in August, together with lower temperatures, contributed to the reduced populations. Late in August inspectors in the New York area were still finding beetles in blooms of roses, hollyhocks, silverlace vine, and other blooms examined in sections that had been infested for 2 years or more. A garden club at Dongan Hills, Staten Island, requested advice and assistance in combating the beetle. At the close of the adult beetle's maximum flight period in the riverfront and market districts of Philadelphia, the regular schedule for inspection of fruits and vegetables was resumed at the inspection platform. This year's heavy adult flight lasted nearly 5 weeks, from July 11 to August 13.

Large quantity of potting soil fumigated.--Carbon disulphide fumigation of 515 cubic yards of potting soil was made for a large nursery in central New Jersey in August.

Floating Japanese beetles washed up on Long Island.--At high tide on August 10, Japanese beetles were washed ashore at Long Beach, Long Island. The insects formed a thin line on the beach, but bathers were so numerous that the beetles were trampled into the sand nearly as fast as they were washed ashore. Apparently an offshore breeze over New Jersey had carried the swarming adults out over the ocean during the week, and a day or two later the dead beetles were carried in with the tide to be deposited on the shores of Long Island and Staten Island. There were no infestations in New York City or Brooklyn that reached the swarm stage, but numerous requests were received by the New York City office for information on the control of Japanese and Asiatic beetles.

Few beetles trapped at old infestation in Springfield, Mass.--Japanese beetle trapping by the park department at Springfield, Mass., resulted in the capture of 45,000 beetles. Last year 36,000 beetles were caught in the same area. One encouraging feature of the control work is that very few beetles were caught in the traps placed in the sections which several years ago received lead arsenate treatments. In West Springfield, where some 5,000 beetles were trapped last year, the traps collected only approximately 2,000 beetles. As was the case in Springfield, practically no beetles were caught in the traps operated in the sections previously poisoned with lead arsenate.

Mobile patrolman to prevent contraband moving from Syracuse.--To forestall the removal of uncertified quarantined articles from the Japanese beetle quarantined zone in the vicinity of Syracuse, N.Y., an inspector with an automobile was assigned to patrol the principal highways leading from the regulated territory. A large number of truckers who were disregarding the certification requirements were turned back to the Syracuse inspection platform, where their loads were inspected and certified.

Japanese beetle inspected cut flowers shipped to distant States.--Cut flowers shipped under certification from the Philadelphia wholesale houses in August consisted principally of roses and gladioli destined to points in the Carolinas, Georgia, Florida, West Virginia, Ohio, and Michigan. Notwithstanding rather unfavorable market conditions there was an increasing demand from nonquarantined States for the general line of cut flowers handled by the Philadelphia wholesalers.

Barge loads of sand fumigated for movement to Midwest.--Three barges, with a combined capacity of 1,500 cubic yards of molding sand, were fumigated with carbon disulphide for Japanese beetle control after loading at Millville, N.J. The fumigant was used at the rate of 1 pound per cubic yard. The barges were for delivery to Midwestern points via the Great Lakes.

First-record Japanese beetle infestation at Chicopee, Mass.--Nursery and greenhouse scouts located two adult Japanese beetles within 500 feet of a nursery at Chicopee, Mass. This was the first indication of the insect's presence in Chicopee or vicinity.

Gypsy moth inspection in pulpwood clearance.--One of the largest pulpwood operations in central New Hampshire has involved the clearing of approximately 500 acres of woodland to produce 5,000 cords of this type of forest product. It is estimated that the 100 men engaged in this work have cut 50,000 trees, half of which are spruce and the other half fir. Gypsy moth inspection was made on a lot basis, the entire cut-over area having been thoroughly scouted and found free from infestation.

Gypsy moth inspections increase.--The month of August was a busy one for practically all district inspectors in the New England territory. Inspection of pulpwood and lumber increased in volume. Many infested shipments were found. While inspecting two carloads of rough-edge lumber at Meredith, N.H., the inspector found 43 gypsy moth egg clusters in one car lot and 39 on the lumber in the second consignment. At Eaton, N.H., the inspection of two additional cars of lumber disclosed 22 egg clusters in the first and 14 in the second lot examined. During an unusually busy week in the Concord, N.H., district, the inspector certified 251 tons of rough granite, 356 pieces of building and monumental granite, 147 ash logs, 46 crates of blueberries, and a small quantity of beans. The latter two items were certified under the Japanese beetle quarantine. Four egg clusters were removed from two of the last-mentioned granite shipments. Most of the paving companies in the Bangor, Maine, district are running with full crews. Pulpwood shippers in the vicinity of Bangor expect to move large quantities of this product. Granite shipments from the Quincy, Mass., district were very good for this season. A quarry at East Weymouth, Mass., started on a 15-carload order for seam-faced granite to be used in the construction of a new church at Mt. Lebanon, Pa.

Stored lumber infested with gypsy moth.--Last spring a lumber company operating portable sawmills in the Portland, Maine, district contracted to deliver one million board feet, or from 80 to 85 carloads of round-edged lumber to Brooklyn, N.Y. This lumber was sawed in woodland heavily infested with gypsy moths. As there were no open fields or pastures available in the vicinity of the woodlots, the lumber was yarded to dry on the lot where it was sawed. During the past summer large quantities of egg clusters have been deposited on the stored lumber. When shipped, the lumber will require a careful piece-by-piece inspection to rid it of egg masses. Had the lumber been yarded in an open field not surrounded by trees or shrubs, the probability of infestation would have been remote and a much less rigid inspection would have been permissible.

Connecticut attempts clean-up of local gypsy moth infestation.--Acting upon information supplied by the district inspector at Willimantic, Conn., the State superintendent of moth work has a crew of scouts engaged in eradicating an infestation of gypsy moths discovered in a private forest at Clarks Corner, in the northeastern section of the State. By the end of August, 125 gypsy moth egg clusters had been located over a rather wide range of territory. There are several carloads of cordwood to be shipped from this woodland area.

Quarry and nursery scouting for gypsy moth.--In the lightly infested gypsy moth area quarries and nurseries in sections not known to be infested were scouted for egg clusters. Determination of freedom from infestation of these establishments and their surroundings allow them to receive permits for their shipments without detailed inspection of each article.

Gypsy moth pupae found later than usual.--Living gypsy moth pupae were found in the Greenfield, Mass., district as late as August 6, when five of them were removed from lumber inspected for shipment to New York City. Usually by the middle of July adults have emerged from all surviving pupae and from then until early in September female moths may be found depositing their egg clusters.

Birch logs may spread gypsy moth infestation.--Summer visitors and campers in northern New England frequently ship home birch logs for fireplace decoration. An inspection of 12 such logs at Weirs, N.H., near Lake Winnepesaukee, disclosed 4 egg clusters. After all infestation had been removed, the logs were shipped under certification to Long Island, N.Y.

Scouting for satin moth.--Early in August district inspectors scouted areas beyond the borders of the area in the New England States designated as infested with the satin moth. Most of the observations gave negative results. Egg clusters of the satin moth were found in the towns of Linneus and Houlton, in Aroostook County, Maine. These towns are about 30 miles north of the area now under regulation for this insect. While scouting for satin moths in the town of Shelbourne, Coos County, N.H., two gypsy moth egg clusters were found on a willow tree near a garage and farm tourist home. This infestation, in a lightly infested gypsy moth area, appeared to have been spread in the caterpillar stage by a tourist traveling from a heavily infested camp to this uninfested district. By arrangement with the port inspection office at Seattle, Wash., an inspector was detailed from July 22 to August 12 to scout a tier of counties in central Washington east of the area in the State designated as regulated on account of the satin moth. Observations were confined to black cottonwoods and willows, the host trees of the insect in the Pacific Northwest. Although three weeks were spent in scouting an extensive area in Klickitat, Yakima, Kittitas, Chelan, and Okanogan Counties, all observations gave negative results. In the course of the survey many dead trees were observed along the Columbia River.

Corn borer damage in Connecticut.--Under the direction of the Connecticut Agricultural Experiment Station, a State survey of damage caused by the European corn borer is being made by three field men. This year's corn borer injury in the State extended over a much larger area than that of last season. An attempt is being made to determine the area in which severe commercial damage occurred.

FOREST INSECT INVESTIGATIONS

Survey of the Yellowstone Park bark beetle control project.--J. C. Evenden, of the Coeur d'Alene, Idaho, field laboratory, reports that forest-insect surveys are now being made of the Yellowstone Park and of the Teton, Targhee, Gallatin, and Beaverhead National Forests. These surveys, which are under the direct supervision of officers of the Coeur d'Alene laboratory, are for the purpose of determining the 1934 status of the mountain pine beetle infestation, which threatens to destroy the pine stands of these areas, and to learn whether the reopening of this project in the spring of 1935 will be feasible. Actual control work in connection with this project was discontinued in the spring of 1931, as the outbreak had reached such a magnitude that further control seemed inadvisable.

Weevil not primary in destruction of western white pine.--W. D. Bedard, of the Coeur d'Alene, Idaho, field laboratory, reports that the weevil Pissodes curriei Hopk., associated with the mountain pine beetle in western white pine, is not primary in its attacks. It restricts its attack to the base of the tree, and is most abundant just above and below the ground line in the root collar and large lateral roots. It was believed that this insect possibly attacked the tree 1 year prior to attack by the mountain pine beetle and that in association with various Armillaria fungi it was the primary agent causing the death of the tree. However, an examination of 127 infested trees indicated that the weevil attacked the tree the same year as did the bark beetle, and more detailed observations on 33 of these trees showed that the weevil deposits eggs from 3 days to a month after the bark beetle attack. In no instance were the weevils found in green pines, although 217 trees were examined, showing that they apparently attack only trees infested by bark beetles.

Parasites of the imported willow leaf beetle.--P. B. Dowden, of the Melrose Highlands, Mass., field laboratory, submits a table showing the results obtained from collections of pupae of the imported willow leaf beetle (*Plagiodera versicolora* Laich) taken at three points in the vicinity of Boston, Mass., during July and August. The purpose of these collections was to obtain data on the extent to which the pupae were parasitized by an accidentally introduced European hymenopteron, *Schizonotus sieboldi* Ratz. Freshly formed pupae of the beetle were collected and isolated in small glass vials and records were kept of the number that gave adults of the beetle and of the parasite. Some pupae gave neither, as the table indicates.

Place of collection	Date of collection	Pupae collected	Pupae giving Plagiodera	Pupae giving Schizonotus
		Number	Percent	Percent
Milton, Mass....	July 12	100	12.0	82.0
Do..........	19	100	18.0	57.0
Do..........	25	100	27.0	63.0
Do..........	Aug. 2	28	17.8	60.7
Do..........	9	59	0	84.7
Belmont, Mass..	July 10	26	19.2	46.1
Do..........	17	100	48.0	44.0
Do..........	24	100	30.0	62.0
Do..........	31	100	9.0	58.0
Do..........	Aug. 7	11	9.0	72.7
Saugus, Mass...	July 13	100	31.0	59.0
Do..........	20	100	17.0	68.0
Do..........	27	100	61.0	28.0
Do..........	Aug. 3	100	29.0	55.0
Do..........	10	20	45.0	45.0

Introduced parasites of European pine shoot moth recovered.--During 1934 two European hymenopterous parasites of the European pine shoot moth were recovered by the Melrose Highlands, Mass., field laboratory from points where adults obtained in Austria by W. F. Sellers had previously been put out. *Tetrastichus turionum* Hartig, first liberated in 1933, was recovered from colony sites in Brookline, Mass., and Matinecock, L.I., N.Y., and *Orgilus obscurator* (Nees), which has been liberated each year since 1931, was taken from colony sites in Brookline and Wakefield, Mass. The latter species was known to be present in the United States prior to 1931, being perhaps accidentally introduced with the European pine shoot moth, but its presence in Brookline and Wakefield is apparently due to liberations made there. Examinations of pine shoots infested with the European pine shoot moth indicate that during 1934 in the vicinity of Boston, Mass., a native hymenopterous parasite, *Hyssopus thymus* Gir., was responsible for the death of a large percentage of larvae that survived the winter.

Birch leaf-mining sawfly.--J. V. Schaffner, Jr., of the Melrose Highlands, Mass., field laboratory, spent August 13-17, inclusive, making observations on the birch leaf-mining sawfly (*Phyllotoma nemorata* Fall.) at points in Maine, New Hampshire, Vermont, and New York. He reports that along the route traveled he believes there is a general increase over last year's infestation. In certain designated areas collections of birch leaves are made to obtain data on the degree of infestation, and infested leaves are saved for parasite recoveries. The following table indicates an increase in infestation since 1933 in four of the six areas.

Observation point	Leaves collected	Leaves infested in 1934	Leaves infested in 1933
	Number	Percent	Percent
Bar Harbor, Maine....	13,685	11.28	14.87
Bethel, Maine........	5,749	14.79	9.69
Strong, Maine........	2,890	11.76	8.72
North Conway, N.H....	5,353	4.45	3.86
Bolton, Vt...........	5,689	13.49	3.72
Keene, N.Y...........	2,869	4.46	7.09

Weight increase of adult elm leaf beetle.--S. F. Potts, of the Melrose Highlands, Mass., field laboratory, finds that adults of the elm leaf beetle kept in cages increased in weight 2.3 times from the time when they emerged from pupae until they entered hibernation. At the beginning of this period of about 3 weeks, during which they were given elm foliage for food, their average weight was 5.7 mg. At the time they entered hibernation their average weight was 13.12 mg.

GYPSY AND BROWN-TAIL MOTH CONTROL

Spraying for gypsy moth did not kill deer.--During the month (August) a report reached the gypsy moth suboffice at Wilkes-Barre, Pa., that dead deer were being found in wooded areas adjacent to localities where spraying had been done in June by Federal crews employed on gypsy moth eradication work. The employees of the suboffice at Wilkes-Barre immediately contacted the State game refuge keeper in the district where the dead deer were supposed to have been found and were told that the keeper had received reports of a similar nature during the latter part of July and that on July 31 he, with an assistant, had made a thorough survey of the territory in question and was unable to find dead game of any description.

Gypsy moth in Columbia County, N.Y.--The New York department of conservation reports that a gypsy moth infestation, consisting of five egg clusters, was found in the town of Austerlitz in August. This town is located in Columbia County, N.Y., adjacent to the Massachusetts State line. Additional scouting will be done in the locality where these egg clusters were found and the necessary treatment will be applied.

Gypsy moth a blueberry pest.--Reports during the past summer have indicated that in some sections of Maine and New Hampshire there has been considerable injury to the blueberry crop by gypsy moth larvae, a condition never before reported. About the middle of July a report was received that gypsy moth larvae were causing much damage to the blueberry crop in the town of Dresden, in Lincoln County, Maine. Later reports from that section state that over an area of about 200 acres there is a heavy infestation, with many egg clusters on the berry bushes and in stone walls on or adjoining the area. A report published in one of the agricultural papers indicates that there was a heavy loss of the blueberry crop in sections of Belknap County, N.H. According to this report the injury by the gypsy moth, "in combination with the effects of dry weather and winter damage, has reduced the crop by hundreds, if not thousands, of bushels in Alton, Gilford, and other towns in that county."

PLANT DISEASE CONTROL

Phony peach eradication.--In cooperation with Louisiana State inspectors, two of the Bureau agents, engaged in the phony peach eradication work in Georgia, have been making a thorough inspection of all the peach trees they could locate in Bossier and Caddo Parishes, La. In certain portions of the two parishes, they found infections so severe as to cause this area to be considered "generally infected." In some instances the inspectors found rather alarming percentages of phony trees in young plantings, indicating that the trees must have been infected at the time they were planted. Some of these young plantings were made with trees purchased in middle Georgia. The inspection work was continued in 11 counties in Georgia and up to August 31, 1,281,046 trees located in 192 commercial orchards had been inspected. Of these, 27,107 trees were found to be infected. In addition to inspection of commercial orchards, 17,287 trees scattered through 955 home orchards were inspected. Of this number, 1,809 trees were "phony", making a total of 28,916 peach trees found to be infected with the phony disease this season in Georgia.

Correction.--In the News Letter reporting activities for July (vol. 1, no. 2, pp. 10-11) it was erroneously reported that during inspection work this season in Texas 69,545 infected trees had been found in commercial orchards and 12,609 phony trees in home orchards. The above figures represent the number of trees actually inspected. The correct number of phony trees found is 501--366 in commercial orchards and 135 in home orchards.

Barberry eradication for prevention of black stem rust.--With harvest practically completed in the North Central States, it is evident that losses to small-grain crops attributable to black stem rust is of little consequence, as compared with the damage to yield and quality resulting from the drought. Although stem rust became general throughout the Dakotas and Minnesota in July, the spread of the disease was greatly retarded by the lack of moisture necessary for the germination of spores and by the premature ripening of the grain. A preliminary estimate indicates that the damage from stem rust will not exceed 5 percent in any State of the spring-wheat area. The Public Works program for prevention of black stem rust is satisfactorily progressing, with a total of approximately 500 men at work in the 13 North Central States. During August approximately 70,000 barberry bushes were destroyed.

Citrus canker eradication.--Inspections for the month of July were continued in six Gulf Coast counties of Texas. This work was carried on principally in Brazoria, Galveston, and Harris Counties. Sporadic outbreaks of canker have occurred in these counties during the past few years. Some scouting was done in Chambers, Jefferson, and Matagorda Counties. During the month 41,239 citrus trees were inspected in Texas and 2 satsumas were found to be infected with citrus canker. These infections were recurrent in an old orchard northeast of League City. In Louisiana inspection work was completed in the parishes of Iberia, St. Martin, and St. Mary in July, no citrus canker being found. Work was then started in Assumption and La Fourche Parishes and one Louisiana sweet orange seedling was found infected with citrus canker in La Fourche Parish. Both it and an adjoining tree were destroyed. During August 4 trees infected with citrus canker were found in Texas, 3 in Brazoria County and 1 in Galveston County, and 1 in Louisiana, in Terrebonne Parish. All infected trees have been destroyed.

Dutch elm disease.--By September 10 the number of trees found infected with the Dutch elm disease and confirmed by the laboratory as having Graphium exceeded 7,000. Of these, 2,054 were reported from New York, 4,929 from New Jersey, and 56 from Connecticut. All the infected trees in New York and Connecticut will be destroyed by the end of October, it is believed, but with the funds as yet available from the State and Federal sources it will apparently be impossible to complete the destruction of the infected elms in New Jersey. The disease in this region has been found as far southwest as Lamington and Hillsboro, N.J., and as far northeast as Fairfield, Conn., with the center remaining near New York harbor. Early in September a tree was found infected with Graphium at Cleveland, Ohio, in the vicinity where several others were diseased in 1931 and 1932; but, in spite of this apparent carry-over, Graphium does not seem to spread in that State.

Accomplishments in blister rust control.--Blister rust control work is in progress in 31 States where the white pines are of importance, either for timber production, watershed protection, soil-erosion prevention, or recreational development, or for two or more of these purposes. This work probably reached its production peak for the season in July with the eradication of 57,019,118 Ribes plants on 682,010 acres of land. This was accomplished with 240,827 man-days of labor by approximately 19,000 men. Total accomplishments for the season up to August 31 show that 2,372,247 acres have been cleared of 169,934,568 Ribes bushes, with 737,219 man-days of labor.

White-pine areas mapped by plane.--Blister rust agents are often confronted with the problem of locating and mapping white-pine areas in remote and inaccessible regions. Hence, when Pilot Reed Brown, who is now employed as a foreman on Ribes-eradication work in Clarion County, Pa., suggested to Agent De Berti that they take a ride in his plane to see what the country looks like from the air, De Berti realized that this was his opportunity to spot-map two remote sections in Clarion and Jefferson Counties, Pa. With the aid of United States Geological Survey sheets and county road maps, the territory bounding the Clarion River and the North Fork Creek was soon mapped.

Indians stage Ribes-eradication contest.--The first Ribes-eradication contest ever held in Wisconsin between Indian reservations took place on July 28 during the Field Day celebration at Lac du Flambeau, when a picked Indian crew from the Lac Court Oreilles Reservation challenged the best crew on the Lac du Flambeau Reservation. The contest was won by the Lac du Flambeau crew by a narrow margin. Large Ribes-eradication programs are in progress on both reservations this year and, as they are separated by only about 100 miles, the keen rivalry which exists between the two groups centered on a controversy as to which reservation possessed the championship crew.

Pine area shows heavy blister rust infection.--An extensive pine-infection area in Becker County, in northwestern Minnesota, was recently inspected by H. N. Putnam, Milwaukee, Wis. This area was located by Ribes-eradication crews. The heaviest infection is quite general over about 15 acres of white pine in the 11-20-year class, averaging about 500 trees per acre. Approximately 30 percent of the pines over the entire area were infected, with nearly 100 percent infected in one part and 10 percent already dead. The oldest canker found was probably of 1923 origin. Many other cankers of 1927 origin were found and a large number of young cankers on 1932 wood were present. The crews had pulled about 150 *Ribes cynosbati* per acre in this area; therefore, as no *R. nigrum* were found, this infection appears to have been caused by *R. cynosbati*.

COTTON INSECT INVESTIGATIONS

Boll weevil resistance of cotton.--E. W. Dunnam, Stoneville, Miss., in charge of the studies on boll weevil resistance of cotton, has had some 40 varieties of cotton under observation at each of the State experiment stations at Stoneville, Raymond, Natchez, Poplarville, and State College, Miss., and at St. Joseph and Baton Rouge, La. The same varieties were thus grown this season under different conditions of soils and rainfall. Special attention has been given to determining at what age of the boll the carpel lining hardens sufficiently to prevent development of the boll weevil larvae. A simple and rapid method for field examination, sufficiently accurate for the preliminary comparative studies, has been developed. The test is simply the pulling of the carpel lining from the carpel to determine the age of the boll at which the lining can be pulled all the way across the carpel without fraying out. In some commercial varieties the carpel lining is too soft to pull at 12 days, but sufficiently tough for 50 percent to pull at 13 days and 100 percent at 14 days. In other highly selected varieties the linings may all be soft on the 15th day and all "pull" on the 16th day, whereas other varieties, especially the Sea Island crosses, were found with both soft and hard bolls over a period of 5 or 6 days. The same varieties grown under moderately dry and extremely wet weather conditions showed a variance of only 3 or 4 days in the development of the carpel lining to a similar toughness. Along with this study detailed records are being made of weevil damage in each variety under similar field conditions. Boll damage by weevils has been unusually heavy this season in many places, due to the early stoppage of square production caused by drought.

Studies of Microbracon mellitor Say.--J. W. Folsom and P. A. Glick, Tallulah, La., report: "Our biological studies of this most important parasite of the boll weevil are progressing satisfactorily. The habits of the insect are being closely observed. We now have no difficulty in keeping the parasites alive for long periods, and in obtaining mating and oviposition. Twenty-seven males and seven females of the new generation have been raised. The males emerged in from 4 to 10 days after hatching and the females in from 5 to 10 days. An abundance of material in all stages has been fixed and preserved for morphological study this winter."

Trichogramma for boll worm.--T. P. Cassidy, Tucson, Ariz., reports that the cotton growers of the Salt River Valley have purchased several million Trichogramma parasites for controlling the boll worm infestation. Reports received from farmers indicated that the damage was general, but field examinations showed that the infestation was very spotted.

Parasitism of pink bollworm low.--L. W. Noble and W. T. Hunt, Presidio, Tex., have examined the blooms collected from trap plantings of cotton in the Big Bend area for the presence of pink bollworms and their parasites. A total of 2,575 pink bollworms were found, of which 1.71 percent were dead when examined. Most of this mortality was due to causes other than parasitization, as only 3 parasites emerged from the lot. The parasites that emerged were Microbracon mellitor Say and Elasmus setosiscutellus Cwfd. Last year the parasitization by native species was considerably higher.

Insecticides for pink bollworm.--The field tests with barium and sodium fluosilicate and with derris with different diluents for pink bollworm control have been disappointing. Although all of these gave some evidence of control there has been no striking reduction in infestation with any of them and the results in the field were not as satisfactory as in the laboratory tests. This is probably due to the difficulty of obtaining good boll coverage, the poor adhesiveness under the arid conditions in the Big Bend, and the fact that about one-third of the larvae found in the bolls had entered beneath the calyx where the dust did not reach.

Cotton leaf worms in Calhoun County, Tex.--Most of the second-growth cotton in Calhoun County was destroyed by the fifth generation of leaf worms during the latter part of August. A few farmers have continued dusting for boll worm and boll weevil control and the indications are that with favorable weather they will produce a late crop of around one-third bale per acre. One thousand leaf worm pupae collected during August produced 951 adults and 31 specimens of the parasite *Brachymeria ovata* (Say). Four hundred eggs of *Alabama argillacea* Hbn. produced 81 larvae and 196 *Trichogramma minutum* Riley. Several plants of Arizona wild cotton (*Thurberia thespesioides*) planted for boll weevil host-plant studies, were considerably ragged by leaf worms.

Thiodiphenylamine only slightly effective against cotton leaf worm and the boll worm.--R. W. Moreland and A. B. Beavers report a number of tests at College Station, Tex., in which thiodiphenylamine was used at various strengths in mixtures with sulphur, lime, fuller's earth, bentonite, and derris against the cotton leaf worm and the boll worm. Thiodiphenylamine was mixed with sulphur at rates of 50 to 50, 25 to 75, and 15 to 85, and was mixed with lime in the same proportions. With fuller's earth, bentonite, and derris it was used only as a 50-50 mixture, and tests were also made with thiodiphenylamine without a diluent. None of these mixtures have been consistent in causing high mortality. The only test where the results were impressive was where the 50-50 mixture of thiodiphenylamine and derris powder caused 46.6 percent mortality of leaf worms in 25 hours and 100 percent mortality in 46 hours. In this instance it was probably the derris that killed the leaf worms. In this particular test where the other mixtures were used no worms were killed under 46 hours. In another test in which the derris mixture was not used the mixtures of thiodiphenylamine and sulphur gave better results than any of the other mixtures. After a period of 60 hours the 25 percent thiodiphenylamine 75 percent sulphur mixture had caused a mortality of 66 2/3 percent of the worms, while the 15 to 85 mixture caused a mortality of 33 1/3 percent and the 50-50 mixture killed 46 3/5 percent of the worms. In another test only two materials caused mortality of importance. After 48 hours 73 percent of the worms were killed by the 50 percent mixture of lime and thiodiphenylamine, as compared to 60 percent killed by calcium arsenate. These mixtures were less effective against the boll worm than against the leaf worm.

Thysanura and Collembola abundant in Texas soils.--In connection with studies of the relation of soil-infesting animals to the roots of cotton plants, L. D. Christenson, College Station, Tex., reports some interesting estimates of population of the black soil of the Wilson-Crockett series, 10 miles southwest of Navasota, Tex. In August a survey was completed which includes soil depths to 24 inches. The population of the soil animals, particularly the Collembola and Thysanura, is given in the following table:

Soil depth	Soil animals per acre	Animals per cubic inch of soil	Thysanura per acre	Collembola per acre
Inches	Number	Number	Number	Number
0 - 5----	48,917,000	1.56	748,000	3,119,000
5 - 8----	15,483,000	.82	2,268,000	1,686,000
8 - 12---	7,495,000	.30	408,000	1,090,000
18 - 24---	2,706,000	.07	193,301	Not found

Mr. Christenson says: "The soil depths selected as the basis for each individual census conformed to natural soil stratification. The 0-5-inch layer was exceptionally loose tilth, but fairly moist, owing to recent rains. The 5-8-inch layer constituted an exceptionally hard layer which had become so due to soil shrinkage during the extreme early summer drought. The 8-12-inch layer was also compact, but evidently had never dried to the point where marked soil shrinkage sets in and was somewhat plastic. The 18-24-inch layer was below soil horizon B and was somewhat looser in texture than the layer just above. The dominant species of Collembola was Pseudosinella violenta (Fols.), a root feeder. The dominant species of Thysanura was Evalljapyx sp., which may also prove to be a cotton root feeder. Larger soil animals in the cotton field were conspicuous by their absence."

PINK BOLLWORM AND THURBERIA WEEVIL CONTROL

Pink bollworm infestation light in Big Bend area.--The trap-plot work in the Big Bend area of Texas has been completed for the season, the last plot being discontinued on August 23. The results of this work indicate that the infestation is very light at present, only 4 of the plots showing an average infestation of over 1 percent. For all 28 plots the average percentage of infestation for the season was 1.23 and 0.15 for the adjacent field cotton. In only one section did the trap-plot records indicate a very heavy infestation, and even in this area it took very close inspection to find any worms in the adjacent field cotton. Ginning is now getting under way in this area, and we will soon be able to obtain additional information concerning the infestation by means of gin-trash inspection.

Gin-trash inspection.--Inspection of the 1934 crop began on August 1, one large machine being operated in the lower Rio Grande Valley of Texas and the other in the Matamoros area just across the river in Mexico. Later in the month two hand machines were placed in operation in Mexico, one at Nuevo Laredo and the other in the Don Martin area, a new irrigation project which was opened only a few years ago, but where considerable cotton is now grown. All of the machines were able to obtain plenty of material for inspection and the results have been negative to date. During the latter part of August laboratory inspection was discontinued and 5 large machines placed in operation. One of these machines will work in north-central Texas and the remainder in northwestern Texas. In Florida and Georgia 5 mobile and 3 hand gin-trash machines are being operated. These machines are so located that trash from a large number of gins is being inspected, including all that produced in the regulated areas. On September 3 a pink bollworm larva was found at Bascom,

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in Jackson County, and another larva was found on September 7. On September 4, 2 pink bollworm larvae were found at Live Oak, in Suwannee County, Fla., and an additional larva was found the following day. Suwannee County is located between the two regulated areas in Florida; however, Jackson County is a considerable distance west of the regulated areas. Gin-trash inspection is being concentrated in this section, and we expect soon to have definite information as to the degree of infestation.

Pink bollworm clean-up in southern Florida.--During the course of the clean-up of Key West, which required about 2 weeks, 9 specimens of the pink bollworm were found in green bolls on seedling and sprout plants, the branches of which reached to the edge of the road.

TRUCK CROP AND GARDEN INSECT INVESTIGATIONS

Insects cause heavy losses in stored tobacco.--W. D. Reed, A. W. Morrill, Jr., and E. M. Livingstone, of the Richmond, Va., field laboratory, report that in detailed tests to determine the amount of loss caused by the cigarette beetle and the tobacco moth in flue-cured tobacco stored in hogsheads, it was found that the loss occasioned by these two insects averaged approximately 20 percent of the weight in the samples examined. Ordinarily this damage extends to a depth of 6 inches in each hogshead. As there are more than 600,000 hogsheads of flue-cured tobacco in this country at the present time and as it is expected that at least half of these hogsheads will become infested to a depth of 6 inches or more, the annual loss to this one type of tobacco alone is estimated at approximately $8,230,000.

Chemotropic control of tomato worm moths in tobacco fields.--J. U. Gilmore, of the tobacco-insect laboratory at Clarksville, Tenn., reports that the use of poison feeders against Phlegethontius sexta Johan has given about the same control as for the 3 preceding years. Usually 10 or 12 tobacco fields are equipped yearly with a maximum of 10 moth feeders per acre of tobacco. These feeders are kept filled with tartar emetic as the poison and amyl salicylate as the moth attrahent for a period of 3 months, during which time the moth population is materially reduced. During the present season, 5 out of 10 fields required a light application of poison to supplement the larval control obtained by the poisoning of the tomato worm moth. During the past season all of the check fields had to be either poisoned or heavily hand-wormed to obtain a satisfactory control of the pest. These conclusions were based upon the recovery of dead moths in the vicinity of the treated fields, together with biweekly examinations of the treated and check fields to determine the abundance of tomato worm larvae.

Drought inhibits development of beet leafhopper in western Colorado and southeastern Utah.--W. A. Shands, of the Grand Junction, Colo., field laboratory, reports that owing to the lack of precipitation during July and August, the abundance of the beet leafhopper was greatly reduced. He also states that the failure of late summer and fall hosts to germinate, owing to sparse precipitation, will probably prevent the breeding of high leafhopper populations before the advent of winter. Because of low leafhopper populations at present and the probability that equally low populations of Eutettix tenellus Bak. will enter hibernation, the breeding areas of western Colorado and southeastern Utah will probably be of minor importance in supplying economic infestations to western-slope sugar-beet areas in 1935.

Turnips trap leafhoppers in sugar-beet fields.--Mr. Shands and O. A. Hills report that in field and laboratory tests turnips have given very good results as a trap crop for the beet leafhopper in sugar-beet fields in western Colorado. This method appears to hold excellent possibilities as an aid in the control of the beet tenellus.

Drought limits Mexican bean beetle injury in New Mexico.--J. R. Douglass, of the Estancia, N.Mex., laboratory, reports that economic injury to the bean fields in that area by the Mexican bean beetle has been only a very small percentage of that usually experienced. Observations during the dry season have shown conclusively that moisture is essential for egg laying and for the hatching of Mexican bean beetle eggs.

Lime treatment apparently decreases strawberry root aphid infestation.--L. B. Reed, of the Chadbourn, N.C., field laboratory, reports that in one field test the application of agricultural lime at the rate of 3,150 pounds per acre has apparently decreased greatly the amount of damage caused to strawberries by the root aphid Aphis forbesi Weed, as compared to check plot which did not receive any lime.

Cyclamen mite oversummers on strawberry.--Floyd F. Smith, of the Greenhouse Insects Laboratory, Washington, D.C., continuing his studies with Tarsonemus pallidus Banks, has found in recent tests that females of this mite were able to survive the summer on strawberry plants growing in a plot at Arlington Farm, Va.

Mite injury may be differentiated from suspected virus disease of chestnut.--Mr. Smith in his investigations of the tarsonemid mites , T. pallidus and T. latus Banks, on chestnut seedlings and hybrids, reports that as a result of recent studies he is able to differentiate between mite injury and the symptoms of a suspected virus disease of chestnuts.

Nicotine dust shows promise in controlling cabbage aphid in Ohio.--N. F. Howard and R. H. Davidson, of the Columbus, Ohio, field laboratory, report that in experiments conducted at Clyde, nicotine dust, applied during the prevalence of high temperatures and in the absence of adverse wind currents, gave excellent promise in the control of the cabbage aphid. Nicotine sulphate in combination with sulphonated petroleum oil also gave encouraging results. In these tests derris dusts and sprays did not prove as effective as the nicotine dust.

Rapid burning of fields destroys pea weevils.--A. O. Larson, of the Corvallis, Oreg., laboratory, reports that fields burned to control the pea weevil on July 24, a hot, dry day, when the straw burned rapidly, showed a survival of only 1 weevil in 97 collections in 7 fields. On the other hand, fields burned on July 25, a cloudy, humid day, when the fire failed to carry where the straw cover was thin, showed a survival of 11 weevils in 86 collections in 5 fields. In one instance, on July 27, a field was accidentally fired, an acre burning before the conflagration could be stopped. No living weevils could be found on this section of the field.

Derris and naphthalene-lime dust tested for onion thrips control.--Reporting on results of recent insecticidal tests against the onion thrips on onion, H. H. Richardson, of the Greenhouse Insects Laboratory, Washington, D.C., states: "A dilute derris-sulphonated castor oil spray (rotenone approximately

1-30,000) appeared to be about equivalent to a nicotine sulphate (1-800)-fish oil and soap spray, as judged by determinations of the number of thrips on the plants before and after spraying. A ground naphthalene-hydrated lime (40-60) dust appeared slightly less effective. Corroborating the results of other workers it was found that the Sweet Spanish variety of onion appeared more resistant to the attacks of the onion thrips than some of the other common varieties of onion."

Cold-storage treatment effective against gladiolus thrips.--R. H. Nelson, continuing tests on the value of subjecting thrips-infested gladiolus corms to low constant temperatures while in storage, reports that when corms were subjected to a temperature of 36° F. for periods of 2 and 3 months, respectively, complete kill of all stages of the insect occurred. Similarly, when corms were subjected to a temperature of 40° for 3 and 4 months, respectively, a complete kill of all stages, including the eggs, resulted. The efficacy of this practice under commercial conditions remains to be established. This confirms the results obtained in tests conducted during the storage season of 1932-33.

INSECTS AFFECTING MAN AND ANIMALS

Stable flies attack a dummy.--W. G. Bruce, of the Ames, Iowa, laboratory, reports that stable flies are readily attracted to a dummy animal. In an effort to determine whether this species is attracted to its host by sight or smell a rather crude dummy cow was constructed on a light framework of wood, padded with excelsior, and covered with burlap. Close and repeated observation shows that the flies thrust their mouthparts into the burlap. Finding no blood the fly soon leaves, often striking the leg or some other part of the dummy for another try for a meal. Twelve or more stable flies have been observed at one time on one front leg of this dummy. An attempt to catch the flies on the front legs by the use of tanglefoot was not very successful. Some 50 flies were thus caught in 2 hours, but Mr. Bruce estimates that hardly 1 fly in 50 alighting remained stuck to the adhesive. This experiment is similar to those conducted in South Africa some years ago in which R. H. T. P. Harris demonstrated that a dummy animal was attractive to the tsetse fly (Glossina pallidipes Austen).

Screw worm conference in Texas.--A conference of field men engaged in screw worm investigations was held at Menard, Tex., on August 8. E. W. Laake, E. C. Cushing, D. C. Parman, and O. G. Babcock were present. The discovery by Mr. Cushing last winter that we have two species of screw worms to deal with instead of one, as formerly supposed, made necessary an exhaustive study of the biology and habits of the two forms. These studies, so far as they have gone, indicate that the new species, Cochliomyia americana Cushing and Patton, is the aggressor in primary infestations of livestock and that Cochliomyia macellaria Fab. does not oviposit in fresh wounds but will do so in old wounds and also upon carcasses.

FOREIGN PLANT QUARANTINES

Recent entomological interceptions of interest.--A pepper fruit arriving at New York in stores from Italy was found to be infested with a living larva of the European corn borer. This insect was taken in 1927 in red pepper in cargo from Italy. A lamellicorn beetle, *Macrodactylus suavis* Bates, was taken at Boston in banana debris in cargo from Honduras. The beetles *Minthea rugicollis* Walk. and *Lyctoxylon japonum* Reit. were intercepted at San Francisco in orchids (*Phalaenopsis sanderianum*) in the mail from the Philippines. A hemipteron, *Mecidea prolixa* Stal, was intercepted at Washington, D.C., with grass (*Hyparrhenia hirta*) in the mail from Kimberley, South Africa. A living adult of the weevil *Tytthomimus rufotestaceous* Champ. was taken at Charleston, S.C., on banana debris in cargo from Guatemala. Living adults of the beetle *Blapstinus punctulatus* Sol. were taken at New York last March on excelsior packing around melons in cargo from Chile. Living adults of the hemipteron *Eccritotarsus perobscurus* Dist. were intercepted at Nogales, Ariz., on *Neomammillaria compressa* stalks in cargo from Mexico. Three living larvae of the weevil *Apion malvae* Fab. were intercepted at Philadelphia on dry flowers in the mail from Italy. Living specimens of *Geisha distinctissima* Walk. were intercepted at Seattle, Wash., on leaves of *Aralia* sp. and *Euonymus* sp. in ship's quarters from Japan. The coccid *Aspidiotus transparens* Green was intercepted at San Francisco on *Areca* sp. and on *Aucuba* sp. in ship's quarters from Japan. Adults of *Diapus pusillimus* Chapuis and *Platypus australis* Chapuis were intercepted at Baltimore last April in maple logs in cargo from Australia. A living adult of the lamellicorn *Cyclocephala cubana* Chpn. was intercepted at New Orleans on a pineapple in cargo from Cuba. The coccid *Lepidosaphes* (*Coccomytilus*) *halli* Green was intercepted at Washington, D.C., last March, on six apricot scions in the mail from Tripoli. The scions were heavily infested.

Recent pathological interceptions of interest.--Our first interception of *Phyllosticta divergens* Sacc. was made at New York on August 13 on *Albizzia lebbek* seed pods from the British West Indies. *Phyllosticta phaseolina* Sacc. was found on bean pods from Bermuda at New York. The only previous interception was from the Canal Zone in 1918. A diseased tomato from Italy was intercepted at Boston and was found to have several lesions similar to the nail-head spot caused by *Macrosporium tomato* Cke. in this country and Mexico. The first interceptions of the bulb nematode (*Anguillulina dipsaci* (Kuhn) Gerv. and V. Ben.) in this fall's importations of bulbs were made at New York in hyacinths from France and *Chionodoxa* sp. from Holland. Our first interception of *Rhytisma* sp. from England was found at New York on August 3 on maple leaves in a case supposed to contain mulberry leaves. Our first interception of the interesting fungus *Pythium hydnosporum* (Montagne) Schröter was made at New York on August 2 in carnation leaves from Germany. Our first interception of *Glomerella cingulata* (Ston.) Spauld. and Schrenk on avocado was made at New York in fruit from Cuba. Our first interception of *Heterosporium echinulatum* (Berk.) Cke. from Norway was made at New York on August 3, the host being *Dianthus* sp. We have had two interceptions of this disease from England in 1921 and 1922 and one on the *Graf Zeppelin* from Germany in 1928.

Fruit fly finders.--The plant quarantine inspection staff in Philadelphia, with a desire to inject an additional element of human interest into their routine duties, have established an entirely unofficial but highly honorary club, the "F. F. F.", or fruit fly finders. Membership is obtained only when an inspector has made and at least partially identified a bona fide, authentic find of live fruit flies in some host coming from a foreign country. Larval, pupal, or adult stages of any trypetid will qualify an inspector for membership, provided his finding is later verified by determination at the National Museum. However, he remains a mere novice in the society until his third successful interception, upon which he becomes a full member. As the larval stages of fruit flies are difficult to distinguish, membership in this hypothetical fraternity involves more careful study than one might think, but it is well recognized that the necessary application involved in attaining membership is excellent training for the inspector.

New hosts for root knot nematode.--"A list of plants attacked by the root knot nematode (*Heterodera marioni*)", the most complete list of hosts (855) of this nematode, was compiled by Edna M. Buhrer, Corinne Cooper, and G. Steiner, of the Bureau of Plant Industry, and published as issue No. 7, vol. 17, of The Plant Disease Reporter, dated June 15, 1933. The list contains some hosts based on plant quarantine interceptions but only such as had been published in some form or other or that had been determined by the Bureau of Plant Industry. Additional hosts, based on interceptions made at the time of inspection of special permit material particularly, are so numerous in our files that it seems desirable to list them here in order to make the information more generally available. The following list includes additional hosts determined and indexed prior to July 1, 1934, regardless of the date of interception.

Abelia chinensis
"   spathulata
Acacia sp. var. Rustica
Anemone cernua
Antennaria dioica tomentosa
Aphelandra nitens
Ardisia japonica
Asperula nitida
Berberis sargentiana
Bignonia sp. var. Madan Galen
Buddleia colvillei
Calophaca wolgarica
Cassinia leptophylla
Cephalocereus sp.
Chrysanthemum roseum

Chrysobactron hookeri
Clematis armandi
"   chrysocarpa
"   fargesii
"   flammula rubra marginata
"   indivisa lobata
"   lanuginosa lawsoniana
"   "   durandi
"   lasurstern grandiflora
"   macropetala
"   montana lilicina
"   "   superba
"   "   undulata
"   "   wilsonii
"   quinquefoliata
"   venosa

Clematis sp., horticultural varieties: Beauty of Worcester, Campanile, Countess de Bouchaud, Countess of Onslow, Daniel Deronda, Duchess of Sutherland, Edouard Desfosse, Fair Rosamond, Lady Betty Balfour, Lady Loundesborough, Madame Baron Veillard, Madame Grange, Miss Bateman, Modesta, Mr. Leon Beaulieu, Oiseau Bleu, Prince Hendrick, Renie Cassegrain, The Queen.

Clerodendron ugandense
Coix lachryma
Convolvulus linatus
Corylus avellana., horticultural varieties: Kent Cobb, Red Skinned, Cosford, Merveille de Bollwyller.
Cotyledon cacalioides
" coronata
" wallichi
Crassula cotyledon
Cyclamen hederaefolium
Diervilla sp., horticultural varieties: Feeay, Ideal.
Doronicum sp.
" sp., horticultural variety: Miss Mason.
Echeveria pringlei
" retusa
Echinocactus haselbergi
" mihanovichii
" quehlianus
" schumannianus
Epiphyllum sp.
Euphorbia canariensis
" clambertina
" clandestina
" crassipes
" esculenta
" ferox
" filiflora
" gorgonis
" heptagona
" meloformis
" micracantha
" muirii
" multiceps
" nerifolia
" obesa
" pentagona
" pseudoglobosa
" pugniformis
" squarrosa
" stellata
" stellaspina
" susannae
" tridentata
" truncata
Fatsia japonica
Fuchsia excorticata

Gentiana acaulis
Geranium cinereum
Geum hybridum
Haworthia subfasciata
Hedera sp.
Helenium pumilum
Hepatica triloba fl. pl.
Hibbertia dentata
Hoya bella
Hydrangea opuloides
Iris laevigata
Jasminum stephanense
" veneris grandiflora
Lamium orvala alba
Lindera praecox
Mammillaria trichacantha
Neomammillaria sp.
Odontonema rutilans
Oenothera speciosa rosea
Paeonia albiflora
" suffruticosa
Primula pubescens, horticultural variety: Ruby.
Prostranthera rotundifolia
Raphithamnus cyanocarpus
Rehmannia africana
Rochea longifolia
Solandra guttata
Spathoglottis parsoni
Styrax dasyanthum
" veitchiorum
Veronica longifolia maritima
Viburnum carlesii

Viola sp., horticultural varieties: Belle de Chatenay, Moonlight, Reine de Blanches.

DOMESTIC PLANT QUARANTINES

Transit inspection.--Since the discovery at Chicago on July 11 and 12 of 56 live Japanese beetles arriving in cars of produce from points in New Jersey, transit inspectors in that city have carried on systematic inspection of such cars from the infested areas. Of 313 cars of produce inspected up to September 13, 97, or 31 percent, were found infested, according to a summary received from J. M. Corliss. There were 88 live and 157 dead beetles in these cars. Potato cars were 38 percent infested, bean cars 31 percent, and those containing miscellaneous produce, 24 percent. The bean cars, however, contained the largest number of beetles.

White-pine blister rust.--Permits have been issued thus far during the present fiscal year for shipping five-leafed pines from the premises of 13 commercial nurserymen located in the Northeastern States, Maryland, and Virginia, also from Forest Service nurseries at Parsons, W.Va., and Haugan, Mont., and from State forest nurseries at Charlottesville, Va., and Marietta, Ohio. The plots of two of the New England nurserymen had been tentatively approved in previous seasons for growing pines from seed and, although they are located in regions where the disease is prevalent, it was found this season that the protective zones have been successfully established, and the shipping permits were accordingly issued. A number of applicant nurseries in the Lake States, including Federal nurseries, have also carried on Ribes eradication in the surrounding zones, and the areas are now being checked to determine whether shipping permits may be issued.

Tourists carry white pines.--Thirty-seven automobiles carrying white pine trees from blister-rust infected States were intercepted during the month of August by Japanese beetle vehicular inspectors at roadside stations in Pennsylvania, Virginia, West Virginia, and Ohio. In most instances the trees were surrendered at the inspection posts for destruction. Most of the pines had been uprooted from the woods, but in two instances they were reported as nursery grown.

Black stem rust of grains.--The inspection of premises of nursery applicants for permits to ship barberry and Mahonia to the 13 grain-growing States that are being protected against the rust, is approaching completion and shipping permits have been issued to 21 growers and 1 dealer. Permittees who grow barberry and Mahonia from seed are supplied with a list of other permittees, in order that their purchases may be made from concerns that grow only the resistant species.

Phony peach disease.--Inspections for the phony peach disease had been completed up to the middle of September in nurseries approximately as follows: Alabama 4, Georgia 20, Illinois 3, Mississippi 5, Missouri 5, North Carolina 3, South Carolina 5, Tennessee 6, and Texas 40. Of principal interest in the season's work was the finding of the phony peach disease on a tree in Gasconade, Gasconade Co., Mo. This is the first known instance of the disease occurring in the central part of the State, having been limited to the extreme southeastern corner, according to previous reports. At one point in Illinois, however, where in 1932 a case of the disease from 1 to 2 years old had been discovered, no infection was found this year, either on the premises or within the mile zone.

CONTROL INVESTIGATIONS

Entomological buildings at Beltsville, Md.--The contract for the construction of three Entomological buildings on the Entomology tract, located about 2-1/2 miles east of Beltsville, Md., was awarded on August 27. These three buildings include a laboratory building, a series of four greenhouses with headhouse, and a double mushroom house. The laboratory building is 110 by 41 feet and is three stories high, including the basement. It will be constructed of brick, faced with concrete, and will have cinder block backing. The greenhouse group includes a laboratory headhouse 80 by 35 feet, constructed of brick, and three greenhouses 75 by 29 feet, the fourth being 75 by 20 feet and divided into nine small compartments with a glazed corridor along the side. The two mushroom houses, of cinder block concrete, are each 18 by 32 feet, with stucco finish, and are connected by the boiler room, which serves both houses. The buildings should be completed in June 1935.

Insecticidal value of Cracca virginiana.--F. L. Campbell and W. N. Sullivan, Takoma Park, Md., have completed a survey of the insecticidal value of 239 samples of C. virginiana root collected in 17 States by the Bureau of Plant Industry. Tests of acetone extracts of these samples against house flies showed that 17 percent of them might be considered more or less promising. The majority of effective samples came from eastern Texas. East of the Mississippi River no promising samples were found north of the 33° line. The most effective sample came from Harrison County, Tex. It is believed to contain between 3 and 4 percent of rotenone, or material of equivalent toxicity. In one test the toxicity of extracts of seeds, seed pods, and roots of plants collected in one place (Carson, Va.) was compared. The extract of the seeds was effective, whereas those of the seed pods and roots were not.

Action of derris and pyrethrum on imported cabbage worm.--M. C. Swingle and Mr. Campbell, Takoma Park, allowed the imported cabbage worm to feed on cabbage-leaf sandwiches containing dry gelatin film impregnated with derris powder or pyrethrum powder, and in other experiments let them crawl on the same impregnated films. The larvae were killed by feeding on the derris film and by crawling on the pyrethrum film, but were not affected by feeding on the pyrethrum film or by crawling on the derris film. Therefore, derris acted as a stomach poison and pyrethrum as a contact poison in these experiments.

Oxidation involved in toxicity of certain organic compounds to mosquito larvae.--As a result of his tests of synthetic organic compounds against mosquito larvae, D. E. Fink, Takoma Park, believes that organic compounds capable of being oxidized in the tissues may be toxic. Such compounds, like rotenone and phenothiazine, yield nontoxic oxidation products and therefore become ineffective if the oxidation occurs before the insect is exposed to the material, as may be the case when the material is used to protect plants against insect attack. Nitrosobenzene was added to the small number of compounds known to be more toxic than rotenone to mosquito larvae.

BEE CULTURE

Bees killed by plant poisoning.--In recent years it has been shown that both adult bees and brood suffer heavy mortalities from plant poisoning, similar to the plant poisoning of livestock. Geo. H. Vansell and others have shown that honey from California buckeye (*Aesculus californica*) causes such heavy losses of brood that many colonies are killed and the population of others seriously depleted. Mr. Vansell and W. G. Watkins have also reported cases of high mortality of adult bees caused by nectar from "spotted loco" (*Astragalus lentiginosus*) and from "corn lily" (*Veratrum californica*). C. E. Burnside and R. E. Foster reported heavy mortality of brood and bees, caused by a poisonous substance in the honey, undoubtedly of plant origin, that occurred in northern Florida in the spring of 1931. Many colonies and in some cases entire apiaries were destroyed. Beekeepers have reported that similar losses have occasionally occurred over a number of years. In the northern Florida case it was not possible to determine the source of the honey that proved poisonous to the bees. During the present season a number of cases of heavy mortality among bees and brood that showed symptoms typical of plant poisoning have been reported to the Bee Culture Laboratory, Somerset, Md. The reports have come from Texas, Georgia, Nebraska, Virginia, and New York. Some of the reports from Texas and Virginia indicate that bees in rather extensive areas have been affected. In Texas a loss of 80 percent of the colonies was reported in one instance, both adult bees and brood being killed. From samples submitted to the Bee Culture Laboratory it is not possible to make a definite diagnosis but, judging from the description submitted with the samples, it appears quite likely that plant poisoning was the cause. It is exceedingly difficult to obtain definite information on the effect of plant poisoning on bees. It is likely to occur quickly in places not readily accessible, and before arrangements can be made for detailed observations the trouble may be over.

Federal marketing agreement discussed at State beekeepers' meetings.--Warren Whitcomb, Jr., in charge of the Southern States Bee Culture Field Laboratory, Baton Rouge, La., attended the annual meetings of the Alabama State Beekeepers' Association, held at Montgomery on August 31, and the Louisiana State Beekeepers' Association, held at Baton Rouge on September 8. He reports that at both meetings much time was utilized in discussing the marketing agreement for package bees, nuclei, and queens. Changes in the agreement were proposed by both groups. In Louisiana the shippers of bees on comb would like to amend the minimum price schedule so that a 2-pound comb nucleus would sell at the same price as a 2-pound combless package. The Alabama beekeepers did not request a change in price for the coming shipping season unless the prices of other commodities, such as sugar, screen, lumber, and other materials used in the shipping of bees, should rise materially before April 1. Owing to rather heavy losses of package bees in transit during the past season, the subject drew forth a lively discussion between the bee shippers and representatives of the common carriers. Doctor Whitcomb conducted a series of experiments this spring and summer, looking toward further standardization of the shipment of package bees and queens in order to obviate heavy losses. He reports that the sale of queen bees by southern breeders has been unusually low this past season and that many of the shippers are inclined to blame this on the increase in prices that must be asked under the marketing agreement. On the other hand, he points out that because of the general condition of bees in the North, where most of the queens are sold, many beekeepers did not wish to invest in young queens because of the probability that many colonies might die before spring, primarily because of the lack of stores. The difference in the amount of business done by large and small package bee shippers and queen breeders was emphasized at the Alabama meeting. Although no complete reports are available on the volume of bees and queens sold this past year, it is quite evident that the small shippers did not fare so well as the large ones. One explanation for this is that the northern buyers are doing much more cooperative buying than they have in the past; consequently, orders are placed with the larger and more reliable firms, who are in a position to take care of large orders.

Unusual honey crop at Laramie, Wyo.--Late rains, high day temperatures, and cool nights have resulted in a very fine honey-flow at Laramie, reports A. P. Sturtevant, in charge of the Intermountain Bee Culture Field Laboratory. Prior to the end of the honey-flow from alfalfa and sweetclover, some 50 experimental colonies had produced over 6,000 pounds of honey. Twenty of the 50 colonies were only 2-pound packages on July 1. All the honey is of unusually fine quality, almost water-white in color. During the height of the flow some of the strongest colonies increased in weight as much as 25 pounds a day.

Airplane dusting kills bees.--G. H. Vansell, of the Pacific Coast Bee Culture Field Laboratory, Davis, Calif., reports that it was necessary to confine the bees to the hives from daybreak to noon during several days following airplane application of poisonous dust. One application of dust was applied without notice to the resident beekeepers, giving them no chance for protection. It is estimated that this one dusting reduced the population of adult bees 75 percent within 2 days. The loss of nurse bees from poisoning by contaminated pollen also resulted in a total absence of unsealed brood.

Demuth Memorial meetings.--C. E. Burnside, Somerset, Md., attended the Demuth Memorial beekeepers' meetings, held under the auspices of the Michigan State Beekeepers' Association, on August 1 to 4. The meetings were held in memory of George S. Demuth, who died March 2, 1934. Mr. Demuth was a member of the staff of the Bee Culture Laboratory for a number of years prior to his resignation on November 8, 1920, when he accepted the editorship of Gleanings in Bee Culture, published by the A. I. Root Company, Medina, Ohio. His contributions to bee culture, both as a scientist and as an editor, are recognized the world over. The meetings were conducted in the form of a tour, separate meetings being held at Ypsilanti, Grand Rapids, Traverse City, and Battle Creek.

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INSECT IDENTIFICATION

Anacampsis laguncylariella in Cuba.--August Busck has identified specimens received from Angel R. Otero, Havana, Cuba, as Anacampsis laguncylariella Busck. This, he says, is the first record of the species from Cuba and, in fact, the first record since the description of the species in 1900 from material taken in Florida.

Rare braconid received.--Among a considerable number of Braconidae recently intercepted at Philadelphia in a shipment of casewood infested with Lyctus sp., a species of Bostrychidae, and other Coleoptera, were several specimens that have been identified by C. F. W. Muesebeck as Euscelinus sarawacus Westw., a rather remarkable and apparently rare species not previously represented in the National Museum collections.

Melanoplus differentialis in Maryland and Virginia.--Although its occurrence in Maryland and Virginia was to be expected, it is only recently that grasshoppers identified by A. N. Caudell as Melanoplus differentialis Thos. have been taken in those States. Mr. Caudell reports further that recent extensive collecting by H. A. Allard on the higher mountains of Virginia has added much material to the collection of Orthoptera in the National Museum.

European red mite from New Zealand.--Specimens identified by H. E. Ewing as the European red mite, Paratetranychus pilosus (C. and F.) were intercepted five times early this year on shipments of apples arriving at New York from New Zealand. This species has become firmly established in Eastern United States since the World War.

Collection of Membracidae comes to National Museum.--Late in August P. W. Oman brought to Washington from Livermore Falls, Maine, the collection of Membracidae of the late F. W. Goding, which was bequeathed to the National Museum. This collection, which consists chiefly of South American material, contains approximately 5,000 specimens, including numerous types.

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